

## Role of an Ornamental Plant Species in Extending the Breeding Range of a Tropical Skipper to Subtropical Southern Texas (Hesperiidae)

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Human activities have had manifold effects upon populations of various species of lepidoptera. The southern tip of Texas is largely ranching and agricultural with little acreage remaining in a natural state (see Foscue, 1932, 1934). Many agricultural pests affect the growth of these agricultural crops. Several lepidopteran species have apparently increased their natural range as a result of ornamental plants suitable as larval foodplants now occurring in this southern Texas area. Previously, native plants of the proper family or genera were not available.

The blood spot skipper, *Phocides palemon lilea* (Reakirt), was reported to occur "as a straggler in southern Texas to Arizona" by Holland in the second edition (1931) of *The Butterfly Book*. No mention was made of this species in his first edition (1898), probably due to lack of collectors along the southern border of the United States at this early date. However, Scudder (1872: 68) had described *Erycides sanguinea* from "Texas (Capt. Pope, Mexican Boundary Survey)." The specimen(s) may have been collected during the initial boundary survey in the 1850's. Several early collectors failed to find this species, e.g. Lintner (1884). Godman and Salvin (1887-1901: II, p. 296) listed Texas as a questionable locality for *Dysennius albicilla* (now synonymized with *lilea*, see Miller and Brown, 1981). A group from the University of Kansas spent 6 June to 8 July 1905 in the Brownsville area collecting insects but did not find *lilea* (Snow, 1906) Skinner (1911) listed this species and credited Captain Pope. This record was repeated without further remarks by Lindsey, *et al.*, (1931). Klots (1951) did not mention this species, possibly as a result of the negative report of Freeman (1949) who was unable to find this species in field work on both sides of the Rio Grande in the 1930's and 1940's. Nor did Freeman find specimens in several local collections which he examined. Freeman (1951) stated that *lilea* had been "recorded for Texas, but I have never seen a specimen that actually came from the state." Kendall and Freeman (1963) listed this species in their compilation of Texas butterfly and skipper species. MacNeill (1975:576) stated that this skipper "has long been reported to occur in Texas, but its occurrence there

has only recently been verified." In a recent letter to the author, Freeman stated "soon after I left the Valley (in 1948). . . collectors began collecting this species in goodly numbers." Tilden (1974) reported adults from Brownsville (Cameron Co.) and Santa Ana Wildlife Refuge (Hidalgo Co.).

### Larval Foodplants

Common guava (Myrtaceae: *Psidium guayava* L.) was reported as a larval foodplant at Brownsville by Lipes (1961). This same species is the only recorded foodplant reported for *lilea* in Mexico (at Puerto Vallarta, Jalisco, by Comstock and Vazquez, 1961; at or near Cd. Mante, Tamaulipas, by Kendall and Maguire, 1975). Recently, Neck (1978, 1982) reported larval utilization of strawberry guava (*Psidium cattleianum* Sabine), also in Brownsville. A Brazilian subspecies (*phanias* Burmeister) has been reported to feed on *Psidium* spp. (Miles Moss, 1949) and *Eugenia uniflora* L. (Biezanko, 1963).

*P. guayava* is "indigenous to the American tropics but has been distributed to practically all tropical and subtropical areas throughout the world" (Ruchle, 1948). This plant occurs throughout much of Mexico but is native only in the "southern part" (Standley, 1920-1926). Guava has been grown on both sides of the Rio Grande at least since the late 1800's as both Townsend (1897) and Bailey (1916 but from observations during 1900 trip) mentioned this plant. Plantings may have occurred much earlier as it was spread "early" by the Spanish (Ruchle, 1948). *P. cattleianum* is native to Brazil but has long been grown in the United States and Mexico (Standley, 1920-1926).

The lack of a native foodplant for *lilea* in Texas is almost assured because no members of the Myrtaceae are native to any part of Texas (Gould, 1969; Correll and Johnston, 1970). The four alternate plants (papaya, bougainvillea, hibiscus and banana) which Lipes (1961) offered to *lilea* as oviposition sites (unsuccessfully) are not native to this area, despite his statement to that effect.

### Status of *Phocides* in Texas

As a result of the lack of a suitable larval foodplant for *lilea* in the native flora of the lower Rio Grande Valley and the periodicity of the scarce records for *lilea* in this area, I conclude that *lilea* is not a member of the native resident skipper fauna of the United States in the strictest sense. This species has extended its breeding range from (probably southern) Mexico into southern Texas. Note that Hoffman (1941: 241-242) reported *lilea* only as far north as southern Tamaulipas. Following the introduction of guava into Texas, establishment of breeding populations of *lilea* occurred during the nineteenth century. The paucity of records and absence during the 1930's and 1940's indicate extinction subsequent to initial establishment followed by re-establishment. These earlier popula-

tions could have perished during particularly cold winters, e.g. 1866, 1886 and 1899.

### Discussion

A similar dynamic system of establishment-extinction-establishment has been observed in *Melanis pixe* (Boisduval) (Riodinidae) (Neck, 1976b). In the case of *Melanis*, however, native species related to the introduced foodplant occur in south Texas (two in the same genus, *Pithecellobium*, and numerous species in same family, Leguminosae). *M. pixe* is probably a very recent addition to the fauna of south Texas as no records are known prior to the 1950's.

The dynamic systems of population establishment of these species are indicative of the tropical element of the flora and fauna of the lower Rio Grande Valley. The native tropical element is only a small proportion of the flora and fauna of this region. Many tropical forms are able to maintain populations once they are introduced, e.g. snails and slugs (Neck, 1976a). Exclusion of tropical forms is due to a combination of occasional severe cold winter weather (e.g. 19°F at Brownsville in January 1962) and frequent dry periods which are even more significant since the construction of dams and levees to contain floods of the Rio Grande. In the case of phytophagous insects which are restricted to certain plants as suitable foodplants, the presence of suitable plants is also important.

A dispersal of *Dione moneta poeyii* (Butler) from central Tamaulipas into south Texas in 1964 was discussed by Gilbert (1969). This species moved far north of its normal range due to unusual weather conditions. Permanent populations were not established because of inherent unsuitability of the south Texas environment. *d. m. poeyii* is normally found in montane forests. Subsequent reports of this butterfly in south Texas since 1964 are known (R. O. Kendall, pers. comm.). Another exceptional case of long-distance dispersal was witnessed by Freeman (1959) who observed but could not collect a *Morpho* near Hidalgo, Hidalgo County, on 25 March 1945 (date given by Stallings and Turner, 1946). Similarly, *lilea* is assumed to have dispersed to south Texas during favorable climatic conditions. Permanent or semi-permanent populations have become established because a suitable larval foodplant is available and other significant environmental factors (which are largely unknown) are not hostile to its continued presence.

Both *lilea* and *M. pixe* were found by collectors in the 1950's. The occurrence of these tropical species at about the same time in the lower Rio Grande Valley of Texas may have resulted from peculiar climatic conditions of the 1950's. This period included the worst drought in Texas on record (1950-1957) which was accompanied by very warm winter weather (Orton, *et al.*, 1967). Although severe freezes occurred at Brownsville in late January 1949 and 1951, temperatures fell no lower

than 29°F (-1.7°C) from 1952-1961 inclusive with no freezing temperatures during 1954-1958 inclusive. Although this was a dry period in general, heavy rains occurred in late June 1954 as a result of Hurricane Alice which moved inland south of Brownsville. This period of warm winters and at least occasional sufficient moisture may have been a significant aid to the establishment of these two species in the Brownsville area. In 1967 tremendous rains accompanying Hurricane Beulah apparently allowed the establishment of several butterfly species previously unknown to Texas (Kendall, 1970a, 1970b, 1972). Several hurricanes which affected the Brownsville area in 1933 had varied impacts on the butterfly fauna of south and central Texas (Neck, 1977).

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